By restricting the analysis to information provided only in the text (and not, eg, extracted from Kaplan–Meier curves) and considering only the effect of the longest time of follow-up from each study, we calculated an OR of 0.82 (95% CI, 0.67–1.02; $P = .07$). This shows that in PS analyses the superiority of the off-pump approach applies not only to short-term mortality but also to long-term mortality, albeit to a smaller degree.

Eventually, the results of current randomized studies on risk groups that mirror today's typical patient populations will elucidate the truth about the differences between the on- and off-pump approaches.

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doi:10.1016/j.jtcvs.2010.04.020

THEORETICAL COST BENEFITS OF CRYOBIOPSY

To the Editor:

I commend the study by Schumann and colleagues[1] that demonstrated the clear superiority of cryobiopsy over standard forceps biopsy for endoluminal tumor, showing a 36% relative increase and 24% absolute increase in yield as the result of larger and less fragmented samples.[1] Unfortunately, the acquisition of new equipment and technology is hampered by resource rationing in health care systems. Because tariff-base health care systems require demonstration of cost benefit, this article provides useful evidence with which to develop cryobiopsy in bronchoscopy units. At Glenfield Hospital, Leicester, which includes an annual number of 531 fiberoptic bronchoscopies annually, we have audited our own diagnostic yield with forceps biopsy for endoluminal tumor and found this to be only 77% overall for 132 cases over 1 year with evidence of tumor (with some variation between trainees and consultants).[2]

By assuming a similar number of bronchoscopies per year with endoluminal tumor with a similar yield with forceps biopsy, this equates to 30 non-diagnostic bronchoscopies (Table 1). Under the National Tariffs for 2010 and 2011,[3] the total extra annual cost is calculated to be more than £15,000 per year to the Primary Care Trust 9 (Table 1). By assuming a relative increase in performance with cryobiopsy similar to that reported by Schumann and colleagues,[1] this would translate to a cost savings of more than £15,000 per year (Table 1). The capital cost of the cryobiopsy equipment (£7500, ERBE Medical UK, personal communication, May 2010) could be covered by saving 15 repeat bronchoscopies, which would take an estimated 6 months (at 30 saved per year; Table 1). After 1 year, residual cost savings would total more than £6500 despite deductions for capital, maintenance, and consumable costs (Table 1). For subsequent years, residual funds would be in excess of £14,000 (Table 1).

The data provided by Schumann and colleagues[1] give respiratory physicians the opportunity to provide a robust financial case for adding cryobiopsy to their bronchoscopy unit on the basis it will fund itself in 6 months, according to our own calculations and experiences. In addition, better quality biopsies will provide better material for bronchoscopic tissue research studies and molecular markers.[4]

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TABLE 1. Breakdown of extrapolated cost benefits of cryoprobe

Diagnostic yield with forceps biopsy at Glenfield Hospital, Leicester (%)	77%
Repeat bronchoscopy rate (%)	23%
No. of bronchoscopies with macroscopic tumor/year	132
No. of repeat bronchoscopies needed/year (132 × 23%)	30
Cost of standard bronchoscopy (2010 tariff)	£504
Published improved relative increase in yield with cryobiopsy (%)	36%
Estimated diagnostic yield with cryobiopsy at Glenfield Hospital, Leicester (36% relative increase on 77%) (%)	100%
Cost saving of cryobiopsy to Primary Care Trust (£504 × 30)	£15,120
Cost of cryobiopsy equipment (cryosurgery unit and cable, adapter, probes, gas tube, footswitch)	£7,500
No. of bronchoscopies to prevent to cover costs (7500/504)	15
Total annual costs (service contract + consumables)	£955
Residual cost savings after capital costs (15,120 – 7500)	£7,620
Residual cost savings after annual costs (7620 – 955)	£6,665
Residual cost savings, year 2 onward (15,120 – 955)	£14,165

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doi:10.1016/j.jtcvs.2010.04.022

Reply to the Editor:

We thank Dr Medford[1] for the valuable additional analysis concerning the cost benefits of cryobiopsy based on our recently published article in the *Journal*.[2]

We assume that routine use of a flexible cryoprobe to obtain tissue samples is cost-effective. However, it has to be considered that cryobiopsies generally require protected airways (ie, intubation). In addition, deep sedation using midazolam or disoprivan, if not general anesthesia, is required. In most countries, this makes additional personnel or an additional physician (eventually an anesthetist) necessary, which in turn leads to an increase in costs. Further, different health care systems may have different tariffs for bronchoscopic procedures, and this might cause a variation in final cost-effectiveness between different countries. Studies investigating the cost-effectiveness are under way. Most likely, cryobiopsy is a method that will result in cost savings over time. In this sense, we absolutely agree with Dr Medford.

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doi:10.1016/j.jtcvs.2010.04.021

BENEFIT OF USING TOTAL ARCH REPLACEMENT COMBINED WITH STENTED ELEPHANT TRUNK IMPLANTATION DURING ARCH RECONSTRUCTION

To the Editor:

We read with great interest the recent article by Xydas and colleagues.[1] In this study, they introduced a novel technique using left carotid–subclavian bypass (CSB) before arch replacement with staged thoracic stent grafting to achieve hybrid arch reconstruction. Compared with the conventional method, the major advantage of this technique is using prepared CSB to anastomose the left carotid artery to the graft before cardiopulmonary bypass (CPB). Only 2 anastomoses (anastomoses of the distal graft to the aorta and the graft to the innominate artery) must be done during hypothermic circulatory arrest (HCA), decreasing selective antegrade cerebral perfusion (SACP), CPB and aortic crossclamp times, and limiting HCA.

Currently, HCA with SACP is widely used as routine means to protect the central nervous system during aortic arch replacement; however, to some degree, the safe time of HCA with SACP is limited. Therefore, the best way to protect the brain and spinal cord is to shorten the period of HCA as much as possible. Even though the technique of Xydas and associates[1] mentioned in this article could reduce the HCA time by using CSB to complete the anastomosis of the left carotid artery to the graft off CPB, we still think a few questions and limitations need to be considered when using this method. First, the premise of using CSB depends on the pathologic changes of the arch without spreading to the left subclavian artery. Second, might the shunt of CSB lead to cerebral malperfusion during this short term? Third, compared with the technique we used (total arch replacement combined with stented elephant trunk implantation, which we called the ''Sun's procedure'' [2-4] Xydas' method still requires staged thoracic stent grafting to achieve hybrid arch reconstruction.

In our opinion, the Sun's procedure for arch reconstruction is more efficient, simple, and safe. The Sun procedure has been advocated and developed by our research group since 2003.[5,6] Herein, we have summarized the Sun's surgical procedure and made a comparison with the CBS procedure.

A stent graft (MicroPort Medical Company Limited, Shanghai, China) (Figure 1) and 4-branched prosthetic graft (Meadox Hemashield Platinum 4 Branch Graft; Boston Scientific Inc, Boston, Mass) were used in total arch replacement combined with stented elephant trunk implantation. Cannulation of the right axillary artery was used for CPB and SCP. The arterial line was bifurcated for the right axillary artery and for lower body perfusion via 1 branch of a 4-branched prosthetic graft. During cooling, the proximal ascending aorta was opened longitudinally, and aortic root procedures could be done if necessary. HCA was established when the target